

# PLANTS AND SEABIRDS OF GRANITE ISLANDS IN SOUTH-EAST VICTORIA

By MARY E. GILLHAM

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## Summary

The vegetation and seabird populations of islands of porphyritic grey and medium-grained red granite off SE. Victoria are described. The range of exposure suffered on the islands varies widely from the storm-swept Glennies SW. of Wilson's Promontory to the islands in the muddy inner part of Corner Inlet, whilst Gabo I., near the New South Wales border, possesses partially stabilized dunes. Species: acreage ratio ranges from 1:8 on the most exposed island to 8:1 on the most sheltered. The paper forms an introduction to more detailed work on the biotic interrelationships on the islands (Gillham 1960a, 1960b).

## Introduction

The localities investigated off the coast of SE. Victoria range from the Glennie Group 5 m. W. of the S. tip of Wilson's Promontory to Gabo I. 4-5 m. SW. of the N.S.W./Vic. border. They vary greatly in the degree of exposure suffered and the amount of vegetative cover present, but all show modifications of the habitat arising from the nesting and roosting activities of vast numbers of seabirds.

The bedrock in all cases is granite, a coarse-texture grey porphyritic granite containing large feldspar crystals in the more westerly areas and a medium-textured red granite on Gabo I. The derived soil is a fairly coarse-grained sand with varying amounts of incorporated organic matter. In some badly eroded areas only fine granite shingle clothes the rock, and in many places the surface layers are impregnated with dry flakes of guano.

All the islands are occupied by burrowing birds, principally the short-tailed shearwater or mutton bird (*Puffinus tenuirostris*). The blue or fairy penguin (*Eudyptula minor*) occurs on all but the 3 least oceanic islands in Corner Inlet, diving petrels (*Pelecanoides urinatrix*) burrow on the Glennies and fairy prions or dove petrels (*Pachyptila turtur*) have been reported from Clifty I. in the past but their burrows were not seen.

Silver gulls (*Larus novae-hollandiae*) nest on a few of the islands and roosts of black-faced or white-breasted cormorants (*Phalacrocorax fuscescens*) and large black cormorants (*P. carbo*) occur on inshore islands. Cape Barren geese (*Cercopsis novae-hollandiae*) graze on the outer islands, and scattered pairs of Pacific gulls (*Larus pacificus*) and sooty oyster catchers (*Haematopus fuliginosus*) occur.

The islands under consideration are Citadel I., Dannevig I. and McHugh I. in the Glennie group; Clifty I. 12 m. E. of Wilson's Promontory and 20 m. S. of the mainland near Port Albert; Rabbit I. close to the NE. coast of the Promontory; Granite I., Benison I. and Doughboy I. in Corner Inlet N. of the Promontory; and Gabo I. in the extreme SE. of the State.

## Description of Individual Islands

## 1 CITADEL I.

Citadel I. lies at the SW. of the Glennie Group, rises to 370 ft, is about 1/3 m. in diameter and occupies approximately 70 acres. The acreage on this and other islands has been estimated from the marine charts.

It is the most exposed of the islands visited and almost all soil has been swept from the smooth granite dome. Such plants as persist are rooted in a thin layer of organic dust overlain by coarse granite shingle. The substrate resembles the skeletal soils of angular quartz grit and organic matter described for the granite mountains of Flinders I., Furneaux Group, where, as on Citadel I., erosion kept pace with soil formation in many areas (Dinmock 1957).

Vegetation is practically non-existent on the S. and W. slopes and nowhere, except in a small patch of scrub on the most sheltered E. side, does it form a ground cover of more than 5%. Only 7 species of flowering plants are recorded.

*Senecio lautus* is the most abundant species with a small red-leaved, exposure-tolerant type of *Disphyma australe* forming a scattered belt below on the E., and *Leptospermum laevigatum* and *Correa alba* a low scrub above. Some of the *Leptospermum* is as much as 3 metres high but most is dead, the old wood colonized by the moss *Campylopus introflexus*. Away from the E. slopes all specimens are prostrate, confined to crevices and dead.

The flat summit, 370 ft above the sea, supports a sparse cover of very reduced *Campylopus introflexus* and a little prostrate *Senecio lautus* rising no more than 5 cm. from the ground surface. Other species (*Lobelia alata*, *Poa poiformis*, *Danthonia caespitosa*, *Asplenium obtusatum* and the hepatic *Marchantia cephaloscypha*) are more or less confined to crevices; only the mosses (*Sematophyllum homomallum* and *Campylopus introflexus*) occur in the open.

Penguins are numerous in rock crevices, but the absence of a suitable burrowing substrate excludes shearwaters and petrels and the only evidence of these was one dead mutton bird, possibly brought by a predator. Small populations of Cape Barren geese and rabbits graze the sparse vegetation.

## 2 DANNEVIG I.

The second largest of the Glennie Group, Dannevig I. extends a little over 1/2 m. from N. to S., rises to 251 ft and covers approximately 80 acres.

The W. flank is as exposed as Citadel I. and consists largely of bare granite with swards of pure *Salicornia australis* reaching to more than 150 ft above sea level. *Disphyma australe* is the principal species of the exposed coasts, forming prostrate red-foliaged mats on the W. and hanging, green-foliaged curtains on the more sheltered S.

A large form of *Apium* attaining to more than 1 metre in height and with stems 2 1/2 cm. in diameter and broad-lobed leaves 30 cm. long, occurs in crevices in this zone. It has been identified at Melbourne University as *A. graveolens* and at the National Herbarium as *A. prostratum*—the name used throughout this paper. The species resembles the garden celery (*A. graveolens*) more closely than the small native *A. prostratum* but is found only on the most oceanic islands in Bass Strait, many of which are seldom visited and show no other aliens. In such habitats it is a characteristic feature, occupying a similar ecological niche in rock crevices to that of the more widespread form of *A. prostratum*, with which it sometimes occurs, but having a more oceanic distribution and apparently not

colonizing sand dunes as does the smaller type. Both types differ markedly from the correct Western Australian form of *Apium prostratum* which forms tufts 1-15 cm. high.

This community ascends to the elongated island crest where *Stipa teretifolia* dominates much of the W. and *Carpobrotus rosii* part of the E. The commonest subordinates are *Apium*, *Bulbine semibarbata*, *Calandrinia calypttrata* and *Lobelia alata*.

The more sheltered E. slopes are dominated by *Poa poiiformis* tussock with patches of 1 metre high *Correa alba* and *Alyxia buxifolia*. *Rhagodia baccata* and *Tetragonia implexicoma* trail upwards through the shrubs and *Brachycome diversifolia* var. *maritima*, *Helichrysum bracteatum* var. *albidum* (the normal type and a form with dense clusters of woolly, linear leaves), *Lavatera plebeja* and *Pelargonium australe* were present. The coastal *Disphyma australe* belt is much narrower on this side, only 20-40 metres wide.

Mutton birds burrow wherever possible, but the general insufficiency of soil leads to frequent collapse of the flimsy burrow roofs. Widespread erosion has resulted in the SW., leaving former burrows as silted hollows and widely scattered *Disphyma*, *Poa* and *Stipa* as the only stabilizing vegetation. The number of burrows surviving was estimated at 2-3000, these being mainly in the eastern *Poa* and southern *Disphyma*. According to D. L. Serventy this is the first record of mutton birds on Dannevig I., but this is of little significance as it appears that few landings have been made there.

Several hundred small petrel burrows, apparently those of diving petrels, occur beneath the *Poa* and *Stipa* of the summit and an approximately equal number of penguins nest in burrows or rock crevices throughout the island. To judge from the number of individuals seen, and the amount of dung of both species, grazing by Cape Barron geese is of greater ecological significance than grazing by rabbits.

### 3 McHUGH I.

McHugh I., SE. of the Glennies, is the smallest and most sheltered of the group. It rises to 215 ft and occupies about 25-30 acres.

The summit is on the W. side and affords protection to the more gentle E. slopes so that the flora is less markedly halophytic and succulents less conspicuous. The large *Apium prostratum*, *Disphyma australe* and *Senecio lautus* are common in the coastal belt, *Asplenium obtusatum* and *Bulbine semibarbata* less so.

Most of the island is occupied by *Poa poiiformis* tussock with isolated patches of low scrub as on the E. of Dannevig I., much of it killed by salt gales. *Correa alba*, usually associated with *Rhagodia baccata*, is the most abundant shrub; others are *Acacia stricta*, *Leptospermum laevigatum*, *Olearia phlogopappa* and *Sambucus* sp., the last seriously defoliated by an invertebrate parasite. *Carpobrotus rosii*, both forms of *Helichrysum bracteatum* var. *albidum*, *Lavatera plebeja*, *Pelargonium australe* and *Tetragonia implexicoma* are associated with the *Poa*, 19 species of vascular plants being recorded in all.

No attempt was made to estimate the number of burrowing seabirds because the burrows of several species were intermingled, but it is likely that the total population is approximately equal to that of the much larger Dannevig I. Again, all possible sites are burrowed, up to 6 entrances per sq. metre being recorded, and the honey-combed ground collapses readily underfoot. Much of the protective

vegetation has been destroyed by the birds and serious erosion is occurring on the upper slopes.

Mutton birds are aggregated towards the top of the island, penguins and diving petrels on the lower N. slopes, though burrows of all species are scattered throughout, mostly in *Poa tussock*, relatively few in scrub. Light grazing by Cape Barren geese is evident, but there was no sign of rabbits.

#### 4 CLIFFY I.

Cliffy I. lies 12 m. from land off the E. side of Wilson's Promontory, rises to 180 ft and occupies about 100 acres. Only 3 acres in the vicinity of the summit lighthouse carry any soil worth speaking of and much of the granite remains unvegetated.

*Disphyma australe*, often in pure mats, dominates the vegetation except for a small patch of *Poa poiformis* on the summit. Most is of the pink-foliaged, exceptionally succulent type characteristic of salt marshes, less red and stunted than that of severely exposed rocks and less green and attenuated than that of sheltered hollows.

A robust form of *Apium prostratum*, intermediate between the normal and the celery-like form, is common in crevices of the *Disphyma* community and the only woody vegetation present is a small patch of *Kunzea ambigua* near the lighthouse. Man-introduced weeds are plentiful around the buildings, where the native *Lavatera plebeja* also thrives in the disturbed soil, but only a few have become generally distributed.

*Asplenium obtusatum* is unusually common, most of it adopting the dense, succulent, obtuse-leaved form characteristic of maritime situations. The more lax form with larger, acute leaves characteristic of inland localities was seen in crevices. Like the essentially similar *A. marinum* of British cliffs, this fern varies considerably, depending on the degree of shelter afforded by the habitat. In SE. Australia, particularly in the high rainfall areas on cliffs almost 1,000 ft high (e.g. Maatsuyker I. in the extreme SW. of Tasmania and Tasman I. in the extreme SE.) a gradual merging of *A. obtusatum* into *A. scleroprium* can be traced with increasing height above sea level. In the Stewart I. district of S. New Zealand the obtuse-leaved form reaches a larger size and grades imperceptibly into the typical woodland form of *A. lucidum*. A similar cline can be seen between the erect, succulent, maritime form of *A. flaccidum* and the large, pendulous woodland form.

A small colony of mutton birds, probably not more than 100, has attempted to burrow in the scanty soil of the island summit, but the shelter of *Poa tussocks* has had to suffice for the many which found soil depth inadequate. Scattered mutton birds and penguins occur in crevices of the main *Disphyma* zone and about 100 pairs of silver gulls nest on the N. slopes. The small population of fairy prions, reported by the Victorian Bird Observers Club to be present on the island, was not located.

#### 5 RABBIT I.

Rabbit I., although not so sheltered as the islands in Corner Inlet, is less than a mile from the shore and protected from the prevailing south-westerlies by the mountainous country of Wilson's Promontory. It occupies an area of 80-100 acres and attains a height of 194 ft in the NE.

The greater shelter is reflected in the presence of a sandy beach on the N. side, a feature not seen on the 4 oceanic islands described above but present on 3 of the 4 inshore islands described below. A sand-filled valley leads inland from the back of this beach and the granite rises gradually from both ends to form precipitous cliffs on the S. and E. The valley soil consists of almost unchanged beach sand, elsewhere the soil is dark with humic material but still sandy.

Fire had swept the island about 18 years previously but any shrubs then existing had failed to regenerate and the only ones present in 1959 were a small patch of *Acacia longifolia* on the summit and a few small bushes of *Correa alba* in the N.

The vegetation is now unusually homogeneous, a fairly pure stand of *Poa poiiformis* extending throughout the island. Very few subordinates have survived the combination of summer drought, burrowing birds and grazing rabbits on the main part of the island but introduced *Carduus tenuiflorus* and a tall, non-maritime form of *Senecio lautus* are not infrequent in the sand-filled valley where *Scirpus nodosus*, *Ammophila arenaria* and *Pteridium esculentum* also occur.

Many thousands of mutton birds burrow throughout the island, avoiding only the mobile valley sand and the steeper cliffs. Many hundreds of penguins are scattered through the rookery and large contingents use the N. beach as a means of access.

Black-faced cormorants occur on the NE. cliffs and silver gulls and crested terns (*Sterna bergii*) nest among *Poa* and *Disphyma* on nearby Rabbit Rock.

## 6 GRANITE I.

Granite I. is the least sheltered of the Corner Inlet mutton bird rookeries, lying 5 m. in from Entrance Point and separated from the NE. tip of Wilson's Promontory 1½ m. away by the deep water of Benison Channel. Its granite dome occupies approximately 3½ acres and slopes directly into the sea on all sides from a height of 60-70 ft.

*Poa poiiformis* is again the dominant plant with patches of *Carpobrotus rossii*, *Lepidium foliosum*, *Pelargonium australe* and *Rhagodia baceata* around its lower fringe, particularly where nesting seabirds are plentiful. A small clump of *Pteridium esculentum* occurs on the sheltered E. side. The only woody vegetation is a single stunted specimen of *Acaea longifolia* var. *sophorae* in a summit crevice. More typical rupestral species are *Bulbine semibarbata*, *Gnaphalium purpureum*, *Crassula sieberiana* and introduced *Vulpia bromoides*.

Mutton birds occupy all suitable habitats and many unsuitable ones where the soil is of insufficient depth for adequate burrowing. Penguins do not occur on the Corner Inlet islands, but more than 100 pairs of silver gulls nest on the lower S. slopes and about the same number of black-faced cormorants roost on the lower N. slopes.

## 7 BENISON I.

Benison I. lies in the S. part of Corner Inlet and is separated from the N. coast of Wilson's Promontory at low tide by 1¼ m. of exposed mud flats crossed by a narrow channel of open water. It occupies about 19 acres and slopes gently to a flat summit a little over 50 ft above the sea. The W. and N. sides are bordered by the deeper waters of Benison Channel and suffer a fair degree of exposure; the S. and E. are sheltered and edged with sandy beaches, grading from fine shingle

in the SW. to muddy sand in the E. *Zostera muelleri* maintains a foothold on the lower part of these beaches and leads down to *Posidonia australis* below L.W.M.

Except in the W. mutton bird colony where bird activity has reduced the habitat to a typical rookery type, the vegetation is very different from that of the 6 islands considered previously—less halophytic and more diverse.

Extreme halophytes such as *Asplenium obtusatum* and the large form of *Apium* were not seen and others such as *Disphyma australe* were found to be rare and located principally near the sea on the exposed side. On a tidal islet of low-lying granite in the SW. these are associated with others more characteristic of salt marshes than of windswept cliffs, viz *Apium prostratum* (the normal small form), *Hemichroa pentandra* and *Selliera radicans*. There are no dunes but dune species such as *Cakile maritima* var. *edentula*, *Sonchus megalocarpus* and *Spinifex hirsutus* occur on the beaches.

The more shelter-loving *Carpobrotus rossii* replaces *Disphyma* as the dominant species of the W. coast granite and ascends through the rookery above, becoming co-dominant first with *Pelargonium australe* and further inland with *Poa poiformis*.

The main part of the island is occupied by *McLalca ericifolia* scrub with *Banksia integrifolia* trees rising to 3–4 metres and scattered *Acacia melanoxylon*. As an understorey beneath the shrubs, and a discontinuous transition zone between them and the maritime communities, is a thick growth of *Clematis microphylla*, *Correa alba*, *Lomandra longifolia*, *Poa poiformis* and *Pteridium esculentum*.

*Carpobrotus rossii*, *Crassula sieberiana* and *Pelargonium australe* are rupestral, as on the more exposed islands, but their fleshy-leaved associates (e.g. *Bulbine semibarbata*, *Brachycome diversifolia* var. *maritima* and *Calandrinia calyptata*) are replaced by stunted mesophytes (e.g. the alien grasses *Aira caryophyllca*, *A. praecox* and *Bromus diandrus*, *Centropis strigosa*, *Hypochaeris radicata*, *Scirpus cernuus*, *Juncus bufonius*, *Sagina apetala*, *Scirpus antarcticus* and *Stellaria multiflora*).

The small population of mutton birds is more or less confined to the open area of the W. and is kept in check by foxes which cross the mud flats at low tide. In heavily burrowed patches at the scrub margin a tall etiolated *Sambucus* sp. occurs, partially dead and leaning against adjacent vegetation as though stimulated to excessive soft growth by an overdose of nitrogen in the soil. Its association with burrows, both here and elsewhere, is reminiscent of the association of *Sambucus nigra* with rabbit burrows in Britain.

There is no evidence that other sea birds nest here, although the usual silver gulls and black-faced cormorants are present in small numbers around the coast. The only sign of rabbits seen was a skull, possibly brought by a predator.

## 8 DOUGHBOY I.

Doughboy I. lies in the inner NW. part of Corner Inlet about 6 m. S. of Port Franklin. The distance of fetch to the W. is only about 3 m., much of which is occupied by *Zostera* flats at low tide, so exposure is relatively slight. The island consists of a fairly steep-sided granite mound about 60 ft high and 10 acres in extent, partially surrounded by sandy beaches and offshore sand banks.

The greater shelter is reflected in the larger number of species and the ability of woodland plants such as the tree fern, *Cyathea australis*, and the liane, *Clematis aristata*, to thrive in the open on parts of the E. coast.

Only 4 succulent halophytes were recorded in 1959 and of these *Crassula sieberiana* and *Senecio lautus* had adopted the non-succulent inland form, *Salicornia*

*australis* was confined to the beach, and *Chenopodium glaucum* to the guano-saturated soil of a slag roost.

*Poa poiformis* is rare, the species of the grass swards on the more exposed slopes including a high proportion of aliens (*Aira caryophyllca*, *A. praccox*, *Anthoxanthum odoratum*, *Briza minor*, *Bromus mollis*, *Holcus lanatus*, *Vulpia bromoides* and various pasture weeds). With them are native grasses and *Acacia anserinifolia*, these grading into stands of *Pteridium esculentum* and low *Correa alba* thickets.

Stunted *Melaleuca ericifolia* occupies much of the shallower rocky soil and reaches heights of 2-3 metres on deeper soil in the S. and E. where *Solanum avicularc* is an important member of the shrub layer beneath. A clump of tall *Eucalyptus viminalis* persists on the island summit, but the vegetation of most of the remainder has been much modified and consists principally of introduced *Vinca major* and *Carduus tenuiflorus*. These areas, which occupy most of the island summit, are densely burrowed by short-tailed shearwaters, smaller numbers of which occur in the open scrub of deeper soils and coastal *Acaena anserinifolia*. There are few burrows in the N. grass swards or beneath the bracken, *Correa* or low *Melaleuca* where the soil is often shallow.

Black-faced cormorants and large black cormorants roost on rocks in the NE. and some of the latter frequent spindly *Melaleuca* trees in the SE.

## 9 GABO I.

Gabo I. lies 320 m. ENE. of the Wilson's Promontory group and is larger than any of these (c. 420 acres). Its sandy N. promontory approaches to within a few hundred yards of Telegraph Point on the mainland coast 4-5 m. from the Vic.—N.S.W. border. The island measures approximately  $1\frac{1}{2}$  m. from the N. tip to the lighthouse in the SE. and about  $\frac{1}{3}$  m. from W. to E. Its greatest height is 171 ft and it is the only one of the 9 islands under consideration to show sand dune and heath formations. A few cattle and sheep are grazed on the island and parts are subjected to periodic burning.

Halophytes are aggregated largely on the low red granite platforms of the S., typical species being *Disphyma australe*, *Apium prostratum* (normal small form) and *Lobelia alata*. In the N. the coast is sandy, low dunes covering the whole of the N. promontory from the W. landing beach and exhibiting several major examples of wind-scouring. This entire area is a vast penguin rookery, most of it occupied by almost pure *Carpobrotus rossii*, but there are numerous small patches of the introduced *Stenotaphrum secundatum* (Buffalo grass) and clumps of *Lomandra longifolia*, *Muehlenbeckia adpressa*, *Senecio lautus* and *Zicria cytisoides* (Pl. VII).

This area grades through *Lomandra longifolia*, *Pteridium esculentum* and *Scirpus nodosus* to native scrub which covers the major part of the island and has an understorey of typical heath species. Among the more important trees are *Acacia longifolia* var. *sophorae*, *Banksia integrifolia*, *Leptospermum laevigatum* and *Monotoca elliptica*. Among the shrubs are *Acacia suaveolens*, *Banksia marginata*, *Correa alba*, *Hakea* sp., *Myoporum insulare*, *Persoonia juniperina* and *Pultenaea daphnoides*.

On partially waterlogged, black, peaty soil in the S. the scrub gives way to a mixed community of coarse grasses and sedges.

Many thousands of penguins nest on the island, but mutton birds have reduced during recent years to little more than 100 pairs. White-faced herons (*Notophox novae-hollandiae*) are numerous.

#### Species: Acreage Ratio in Relation to Exposure

5 suppressive environmental factors affect the number of species present on the bird islands:

- (a) Soil disturbance and guano deposition by seabirds
- (b) Rabbit grazing
- (c) Lack of soil depth
- (d) Summer drought
- (e) Spray-bearing winds.

(a) and (b) are discussed in a later work dealing more specifically with the interactions of plants and animals.

(c) has been referred to in the account of Citadel I. where the scanty soil covering was found to support only 9 species of vascular plants. Lack of soil depth there was aggravated by exposure, (e).

(d) was exerting its maximum effect when the islands were visited during and after the January 1959 drought. Species lists compiled at this season were very far from complete, the largest number of species being probably missed on the inshore islands where shelter was sufficient for mesophytic annuals to thrive during the moister winter season and where the source of disseminules of these was sufficiently close for them to reach the islands initially.

(e) was the most potent operative factor and can be illustrated by the species: acreage ratios in the accompanying table for the 8 islands around Wilson's Promontory. The islands have been dealt with in order of decreasing exposure and show a gradually ascending series from a ratio of 1 species to 8 acres on Citadel I. to 8 species to 1 acre on Doughboy I.. The correlation between species number and degree of exposure is remarkably close considering the number of other factors involved, and the only island far out of sequence is Rabbit I. where the number of species was severely depressed by rabbit grazing.

Only a rough comparison is possible because of the different sizes of the islands and the divergence of the total area from the 'minimal area' (i.e. the smallest area containing all recorded species) in each case, but the figures are sufficiently interesting to be included. A species: acreage ratio somewhat higher than expected was seen on the smallest island of each series (McHugh I. of the 4 exposed offshore islands and Granite I. of the 4 sheltered inshore islands) where the total and 'minimal' areas were closest.

No direct correlation with bird pressure can be made because rookeries did not always cover the entire island.

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## Explanation of Plate

## PLATE VII

## Gabo I., N. Penguin Rookery

- Fig. 1—View of part of the rookery in pure *Carpobrotus rosii* on white dune sand.
- Fig. 2—Penguin burrows beneath *Carpobrotus rosii* and *Lomandra longifolia* showing one of many dead penguins in the foreground.
- Fig. 3—Entrance to penguin burrow showing moulted feathers and defoliated stems and exposed roots of the dominant *Carpobrotus rosii*.
- Fig. 4—Large sand blow in penguin rookery probably initiated and certainly aggravated by birds burrowing through the protective mat of vegetation. Looking N. to Telegraph Point on the mainland.

## Tables

In the following tables abbreviations are used for the 9 islands discussed in this article thus—

Ben.—Benison	Ga.—Gabo
Cit.—Citadel	Gr.—Granite
Cl.—Cliffy	McH.—McHugh
Dan.—Dannevig	Rab.—Rabbit
Dou.—Doughboy	

TABLE 1

*Species: Acreage Ratio on 8 Islands around Wilson's Promontory, Summer 1959*  
(Islands listed in order of decreasing exposure)

Series	Island	Locality	A	B	C	D
Exposed offshore islands	Cit.	SW. of Glennie Group	W.	9	70	1 : 8
	Dan.	W. of Glennie Group	W.	20	80	1 : 4
	McH.	SE. of Glennie Group	W.	18	30	1 : 1 $\frac{3}{4}$
	Cl.	20 m. S. of mainland	E.	39	100	1 : 2 $\frac{1}{2}$
Sheltered inshore islands	Rab.	S. of Three Mile Beach	E.	24	90	1 : 3 $\frac{3}{4}$
	Gr.	Outer part of Corner Inlet	N.	16	3 $\frac{1}{2}$	4 $\frac{1}{2}$ : 1
	Ben.	Inner part of Corner Inlet	N.	59	19	3 : 1
	Dou.	Inner part of Corner Inlet	N.	78	10	8 : 1

- A—Direction from Wilson's Promontory  
 B—Number of species recorded  
 C—Approximate acreage  
 D—Approximate species: acreage ratio



* <i>Parapholis incurva</i>				×				×	
<i>Agropyrum scabrum</i>								×	
* <i>Hordeum leporinum</i> ?				×					
<i>Scirpus antarcticus</i> (H)							×	×	
——— <i>cernuus</i> (H)							×	×	×
——— <i>nodosus</i> (U)					×		×	×	×
<i>Carex</i> sp.									×
<i>Lepidosperma concavum</i>									×
——— <i>glabratum</i>									×
<i>Gahnia radula</i> (H)									×
* <i>Zantedeschia aethiopica</i>								×	
<i>Leptocarpus brownii</i> (H)									×
<i>Centrolepis strigosa</i> (H)							×		×
<i>Luzula campestris</i> (H)							×	×	
<i>Juncus bufonius</i> (H)				×			×	×	
——— <i>caespiticius</i> (H)									×
(——— <i>communis</i> )								(×)	
——— <i>maritimus</i> (H)							×		×
——— <i>pallidus</i> (H)							×	×	×
<i>Lomandra longifolia</i> (U)							×		×
<i>Dianella revoluta</i>					×			×	×
<i>Bulbine semibarbata</i>	×	×	×	×	×			(×)	
<i>Thelymitra</i> sp. ? (H)									×
<i>Microtis unifolia</i>							×		
* <i>Ficus carica</i> (H)									×
<i>Urtica incisa</i>								×	
<i>Parietaria debilis</i>								×	
<i>Persoonia juniperina</i> (H)									×
<i>Banksia integrifolia</i> (H)							×	×	×
——— <i>marginata</i> (U)									×
<i>Lomatia ilicifolia</i> (H)									×
<i>Polygonum minus</i> (H)									×
<i>Muehlenbeckia alpressa</i>					×		×		×
* <i>Rumex acetosella</i>									×
——— <i>brownii</i> (H)								×	×
*——— <i>crispus</i> (H)				×					×
* <i>Atriplex hastata</i>				×	×		×	×	×
<i>Rhagodia baccaia</i> (U)	×	×				×			×
<i>Chenopodium glaucum</i> (H)								×	×
——— <i>trigonon</i> (H)									×
<i>Salicornia australis</i> (H)	×			×			×	×	
<i>Hemichroa pentandra</i> (H)							×		
<i>Disphyma australe</i>	×	×	×	×	×		×		×
<i>Carpobrotus rossii</i> (U)		×	×		×	×	×	(×)	×
<i>Tetragonia implexicoma</i>		×	×				×		×

* <i>Portulaca oleracea</i> (H) <i>Calandrinia calyptata</i>		×	×	×	×			(×)	×
* <i>Stellaria media</i> ——— <i>multiflora</i> (H)					×		×		×
* <i>Cerastium glomeratum</i> <i>Sagina apetala</i> ——— <i>procumbens</i>				×			×	×	
<i>Spergularia media</i> * <i>Polycarpon tetraphyllum</i> * <i>Silene gallica</i>				×	×			×	×
<i>Clematis aristata</i> ——— <i>microphylla</i>							×	×	
* <i>Fumaria officinalis</i>				×					
* <i>Nasturtium officinale</i> <i>Lepidium foliosum</i> (H) <i>Cakile maritima</i> v. <i>edentula</i>						×		×	×
<i>Crassula sieberiana</i> (H)		×		×	×	×	×	×	×
<i>Billardiera scandens</i> (U) ( <i>Pittosporum undulatum</i> )								(×)	×
* <i>Rubus fruticosus</i> agg. <i>Acanena anserinifolia</i>							×	×	×
<i>Acacia longifolia</i> (H) ——— <i>longifolia</i> v. <i>sophorae</i> (H) ——— <i>melanoxydon</i> (H) ——— <i>stricta</i> (H) ——— <i>suaveolens</i> (H)					×		×		×
* <i>Alibizzia lophantha</i> (H)			×					×	×
<i>Pultenaea retusa</i> (H) <i>Dillwynia glaberrima</i> (H) <i>Lotus corniculatus</i> (H)									×
* <i>Trifolium campestre</i> *——— <i>dubium</i> *——— <i>repens</i>									×
* <i>Medicago hispida</i> v. <i>denticulata</i> (H) <i>Glycine clandestina</i> (H) <i>Kennedy prostrata</i> ——— <i>rubicunda</i> (H)									×
<i>Pelargonium australe</i> * <i>Geranium dissectum</i> ? * <i>Erodium cicutarium</i>		×	×	×		×	×	(×)	×
( <i>Oxalis corniculata</i> )								(×)	
<i>Correa alba</i> (H) <i>Zieria cytisoides</i> (H)	×	×	×		×		×	×	×

<i>Comesperma volubile</i> (H)									×
* <i>Euphorbia pepylus</i> ( <i>Poranthera microphylla</i> ) <i>Amperea xiphoclada</i> (H)								×	×
* <i>Hibiscus trionum</i> (H) <i>Lavatera plebeja</i> * <i>Malva parviflora</i> ?		×	×	×		×		×	×
<i>Viola hederacea</i>									×
( <i>Eucalyptus paludosa</i> ) ——— <i>viminalis</i> <i>Leptospermum laevigatum</i> (H) <i>Melaleuca ericifolia</i> (H) <i>Kunzea ambigua</i> (H)	×		×					(×) × ?	×
<i>Epilobium billardierianum</i> (H) ——— <i>junceum</i>							×	×	×
<i>Haloragis tetragyna</i> ?									×
<i>Centella asiatica</i> (H) ( <i>Hydrocotyle hirta</i> ) ——— <i>peduncularis</i> (H) <i>Apium prostratum</i> (normal) (H) ——— <i>prostratum</i> (large) (H)								(×)	×
<i>Epacris impressa</i> (U) <i>Monotoca elliptica</i> (U) <i>Astroloma humifusum</i> (U) <i>Leucopogon parviflorus</i> (H) <i>Cyathodes acerosa</i> (H)									×
* <i>Anagallis arvensis</i> <i>Samolus repens</i>				×				×	×
<i>Centaurium pulchellum</i>							×	×	
<i>Alyxia buxifolia</i> (U) * <i>Vinca major</i>		×						×	
<i>Dichondra repens</i> (H)							×	×	×
* <i>Mentha spicata</i> (H)									×
<i>Solanum aviculare</i> (H) ——— <i>nigrum</i> * <i>Lycium ferocissimum</i> * <i>Physalis peruviana</i>								×	×
<i>Myoporum insulare</i> (H)								×	×
* <i>Plantago coronopus</i> *——— <i>lanceolata</i> *——— <i>major</i> ——— <i>varia</i>				×					×

<i>Opercularia ovata</i> (H)									×
<i>Galium propinquum</i> (H)								×	
<i>Sambucus</i> sp.			×		×		×	×	
<i>Wahlenbergia quadrifida</i> ? (H)							×		
——— <i>tudgellii</i> ? (H)								×	
<i>Lobelia alata</i>	×	×		×	×		×	(×)	×
<i>Selliera radicans</i> (H)							×	(×)	×
<i>Brachycome diversifolia</i> var. <i>maritima</i>		×							
<i>Brachycome graminea</i> (H)									×
* <i>Erigeron bonariensis</i> (H)									×
*——— <i>canadensis</i> ?									×
<i>Olearia phlogopappa</i> (H)			×						
——— <i>ramulosa</i> (H)									×
* <i>Gnaphalium candidissimum</i>				×			×		×
——— <i>inulicum</i> (H)								×	
——— <i>involutratum</i> (H)								×	
——— <i>japonicum</i> (H)								×	
——— <i>luteo-album</i>				×			×	×	×
——— <i>purpureum</i> (H)						×			×
<i>Cassinia spectabilis</i>									×
<i>Helichrysum bracteatum</i> var. <i>albidum</i> (H)		×	×						
<i>Helichrysum dendroideum</i> (H)								×	
——— <i>leucopsidium</i> (H)									×
——— <i>obcordatum</i> (H)									×
<i>Cotula australis</i>								×	
——— <i>coronopifolia</i>				×	×				×
——— <i>reptans</i> (H)									×
<i>Senecio biserratus</i> (H)								?	
——— <i>hispidulus</i> (H)								×	×
——— <i>lautus</i> (H)	×	×	×	×	×	×	×	×	×
——— <i>minimus</i> (H)								×	×
* <i>Arctotheca calendula</i>									×
* <i>Cirsium vulgare</i>						×	×	×	×
* <i>Carduus tenuiflorus</i>					×			×	×
* <i>Hypochoeris glabra</i> (H)								×	×
*——— <i>raucata</i>				×			×	×	×
* <i>Leontodon hirtus</i> (H)								×	×
* <i>Sonchus asper</i>				×					×
——— <i>megalocarpus</i>							×		×
*——— <i>oleraceus</i>		×		×		×	×	×	×
Total No. of Species (219)	8	20	17	40	24	17	59	98	134

TABLE 3

*Bryophytes of Bird Islands around Wilson's Promontory*  
(Det. J. H. Willis, National Herbarium)

Species	Cit.	Dan.	McH.	Cl.	Rab.	Gr.	Ben.	Dou.
<i>Marchantia cephaloscypha</i>	+							
<i>Breutelia affinis</i>							+	
<i>Bryum billardieri</i>				+		+		+
<i>Campylopus introflexus</i>	+	+	+		+		+	+
<i>Rhacopilum convolutaceum</i>						+		
<i>Sematophyllum homomallum</i>	+						+	
<i>Thuidium furfurosum</i>							+	
<i>Tortula princeps</i>				+				

TABLE 4

*Species List — Seabirds*

Species	Cit.	Dan.	McH.	Cl.	Rab.	Gr.	Ben.	Dou.	Ga.
<i>Eudyptula minor</i> (Blue or fairy penguin)	B	B	B	B	B				B
<i>Puffinus tenuirostris</i> (Short-tailed shearwater)		B	B	B	B	B	B	B	B
<i>Pelecanoides urinatrix</i> (Diving petrel)		B	B						
<i>Pachyptila turtur</i> (Dove petrel)				B?					
<i>Cercopsis novae-hollandiae</i> (Capo Barren goose)	+	+	+						
<i>Larus pacificus</i> (Pacific gull)	+	+							
<i>Larus novae-hollandiae</i> (Silver gull)			+	B	B+	B	+	+	+
<i>Sterna bergii</i> (Crested tern)					B+				
<i>Phalacrocorax fuscescens</i> (Black-faced cormorant)					+	+	+	+	
<i>Phalacrocorax carbo</i> (Large black cormorant)								+	
<i>Haematopus fuliginosus</i> (Sooty oyster catcher)						+	+		+
<i>Notophox novae-hollandiae</i> (White-faced horon)									+

The first 8 islands are listed in order of decreasing exposure and illustrate the preference of the true seabirds for the more oceanic islands and of the shore birds for the less oceanic islands.

+ — birds present, B — presence of a breeding colony,  
B+ — breeding on Rabbit Rock, not Rabbit I. proper.